Developing robust model for retrieving sea surface current from radar-1 sar satelite data

Abstract

This paper introduces a new approach for retrieving sea surface current from RADARSAT-1 SAR standard beam mode (S2) data. In doing so, the robu st algorithm that involves the wavelength diversity ambiguity resolving (WDAR) and multi look beat freq uency (MLBF) algorithms was used to remove Doppler Centroid ambiguity. The result shows that t he proposed robust algorithm can acquire accurate Doppler Centroid and fine spatial sea surface curre nt variations in RADARSAT-1 SAR standard beam mode (S2) data. The current velocities ranged betwe en 0.18 and 0.78 m/s. In conclusion, RADARSAT-1 SAR S2 mode data can be used to retrieve sea surfac e current with root mean square error (RMSE) of ± 0.11 m/s. Both WDAR and MLBF algorithms can provide accurate information on Doppler Centroid which can acquire accurately sea surface current pa ttern in RADARRSAT-1 SAR image.